

WHAT IS CLAIMED IS:

- 1 1. A liquid crystal display device, comprising:
2 a liquid crystal panel having a plurality of gate and data lines and a plurality of sub-
3 pixels, wherein the gate lines are arranged in a transverse direction and the data lines are
4 arranged in a longitudinal direction, wherein each sub-pixel is defined by the gate and data
5 lines and corresponds to a stripe-shaped color filter that has one of red, green, blue and white
6 colors, a black matrix arranged among the stripe-shaped color filters;
7 a gate driver integrated circuit (IC) connected to the plural gate lines for driving the
8 gate lines, the gate driver IC arranged on a first side portion of the liquid crystal panel; and
9 a data driver integrated circuit (IC) connected to the plural data lines for driving the
10 data lines, the data driver IC arranged on a second side portion of the liquid crystal panel.
- 1 2. The device according to claim 1, wherein a stripe-shaped color filter having a white
2 color is made of a transparent resin.
- 1 3. The device according to claim 1, wherein a stripe-shaped color filter having a white
2 color is an open portion of the black matrix.
- 1 4. The device according to claim 1, wherein the gate driver IC alternates a polarity of a
2 gate line driving signal for each of the gate lines at each frame interval.
- 1 5. The device according to claim 1, wherein the gate driver IC alternates polarities of
2 gate line driving signals for adjacent gate lines during a same frame interval.

6. The device according to claim 1, wherein the data driver IC drives adjacent odd and even numbered data lines.

7. A method of fabricating a liquid crystal display device, comprising:
forming a plurality of gate and data lines on a first substrate;
forming a black matrix on a second substrate;
forming open portions for color filters by patterning the black matrix;
depositing a resin on the black matrix covering the open portions, wherein the resin has one of red, green, blue and white colors;
forming color filters in the open portions by photolithography, the color filters having a stripe shape;
forming a liquid crystal panel by combining the first and second substrates with interposed liquid crystal;
installing data driver integrated circuits (ICs) on one side portion of the liquid crystal panel, wherein the data driver ICs drive the plural data lines; and
installing gate driver integrated circuits (ICs) on one side portion of the liquid crystal panel, wherein the gate driver ICs drive the plural gate lines.

8. A method according to claim 7, wherein the stripe-shaped color filter having a white color is made of a transparent resin.

9. A method according to claim 7, wherein the stripe-shaped color filter having a white

2 color is an open portion of the black matrix.

1 10. A liquid crystal display device, comprising:

2 a liquid crystal panel, comprising,

3 a first substrate having deposited thereon a plurality of stripe-shaped color

4 filters and a black matrix arranged around the stripe-shaped color filters, wherein each color

5 filter has one of red, green, blue and white colors,

6 a second substrate disposed opposing the first substrate and having a plurality

7 of gate lines arranged in a transverse direction, a plurality of data lines arranged in a

8 longitudinal direction, and a plurality of sub-pixels each formed at an intersection of one of

9 the gate lines and data lines, and

10 a liquid crystal material deposited between the first and second substrates,

11 wherein each sub-pixel corresponds to one of the stripe-shaped color filters;

12 at least one gate driver integrated circuit (IC) connected to the gate lines for driving

13 the gate lines, each gate driver IC disposed on a same side portion of the liquid crystal panel;

14 and

15 at least one data driver integrated circuit (IC) connected to the data lines for driving

16 the data lines, each data driver IC arranged on a same one of a top side portion and a bottom

17 side portion of the liquid crystal panel.

1 11. The liquid crystal display device of claim 10, further comprising at least one tape

2 carrier package connecting the at least one data driver IC to the liquid crystal panel.

1 12. The liquid crystal display device of claim 10, wherein each data driver IC drives
2 adjacent odd and even numbered data lines.

1 13. The liquid crystal display device of claim 10, wherein each data line is connected to a
2 plurality of sub-pixels each corresponding to one of the color filters having a same color.

1 14. The liquid crystal display device of claim 10, wherein each gate driver IC alternates a
2 polarity of a driving signal for each of the gate lines at each frame interval.

1 15. The liquid crystal display device of claim 10, wherein each gate driver IC alternates a
2 polarity of a driving signal for adjacent gate lines during a same frame interval.

1 16. A method of driving a liquid crystal panel, including a first substrate having deposited
2 thereon a plurality of stripe-shaped color filters and a black matrix arranged around the stripe-
3 shaped color filters, wherein each color filter has one of red, green, blue and white colors, and
4 including a second substrate disposed opposing the first substrate and having a plurality of
5 gate lines arranged in a transverse direction, a plurality of data lines arranged in a longitudinal
6 direction and a plurality of sub-pixels each formed at an intersection of one of the gate lines
7 and data lines, and further including a liquid crystal material deposited between the first and
8 second substrates, the method comprising:

9 driving the data lines, each data line driving sub-pixels corresponding to a same one of
10 the red, green, blue or white colors;

11 driving the gate lines, alternating a polarity of a gate line driving signal for each of the

12 gate lines at each frame interval.

- 1 17. The method of claim 16, further comprising alternating polarities of the gate line
2 driving signals for adjacent gate lines during a same frame interval.

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